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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/099,953	03/19/2002	Yasuhiro Ayukawa	1517-0138P	6331
2292	7590	04/27/2004	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			GAKH, YELENA G	
			ART UNIT	PAPER NUMBER

1743

DATE MAILED: 04/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/099,953

Applicant(s)

AYUKAWA ET AL.

Examiner

Yelena G. Gakh, Ph.D.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 March 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 5,6,9-11,20 and 21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,7,8 and 12-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-4, drawn to a liquid catalyst, a method of its making, and a classified in class 436, subclass 119.
 - II. Claims 5-6, drawn to an apparatus for producing a liquid catalyst, classified in class 422, subclass 186.
 - III. Claims 7-8 and 12-19, drawn to a method of preparing an oil sample, classified in class 436, subclass 174.
 - IV. Claims 9-11, drawn to an X-ray fluorescence spectrometer, classified in class 250, subclass 493.1.
 - V. Claims 20-21, drawn to an X-ray fluorescence analysis method, classified in class 436, subclass 172.

2. Inventions II and I are related as apparatus and product made. The inventions in this relationship are distinct if either or both of the following can be shown: (1) that the apparatus as claimed is not an obvious apparatus for making the product and the apparatus can be used for making a different product or (2) that the product as claimed can be made by another and materially different apparatus (MPEP § 806.05(g)). In this case the apparatus, comprising a source of electromagnetic waves, can be used for analysis, rather than production of the catalyst.

Inventions III and I are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). Since in the instant application it seems that the combination requires the particulars of subcombination, the Groups will be considered together.

Inventions I, III and II, as well as IV and V are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed

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can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus can be used as an analytical instrument for any process comprising X-ray analysis.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

3. During a telephone conversation with Joseph A. Kolasch on 04/21/04 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-4. The examiner rejoins Group III for examination. Thus, claims 1-4, 7-8 and 12-19 will be examined. Affirmation of this election must be made by applicant in replying to this Office action. Claims 5-6, 9-11 and ~~20~~-21 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Specification

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. The specification is objected to as not being written "in such full, clear, concise, and exact terms as to enable any person skilled in the art to" to practice the invention in its best mode. It appears to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors. Not only the language of the specification is unclear and confusing, the subject matter of the disclosure is not readily apprehensible.

The specification discloses obtaining a "liquid catalyst", which can be used for preparing an oil sample for X-ray fluorescence analysis and from which sulfur is removed. It is not clear, however, what is meant by the term "liquid catalyst" in the present context. The term "catalyst" is a conventional and well-established term in the art. According to the Chemistry Dictionary on-line (http://home.nas.net/~dbc/cic_hamilton/dictionary/c.html), "**catalyst** is a substance that speeds up a chemical reaction without being consumed itself in the reaction, or a substance that

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alters (usually increases) the rate at which a reaction occurs". It is not clear, which exactly reactions said liquid catalyst accelerates. Moreover, it is completely unclear from the specification, what the liquid catalyst is composed of. The method of making the liquid catalyst arises even more questions, on what this liquid catalyst really is. The specification discloses: "first, a silver nitrate solution having silver nitrate dissolved in a solvent is mixed with a sodium acetate solution having sodium acetate dissolved in the solvent, to form silver acetate. Then, the mixed solution is subjected to first filtration to remove the silver acetate. Then, the solution is irradiated with electromagnetic waves or corpuscular rays to precipitate silver sulfide-containing silver compounds and silver. Then, the solution is subjected to second filtration to remove the silver compounds and silver. Then, a nitrogen gas is allowed to flow into the solution to remove dissolved oxygen. Finally, an aldehyde or ammonia is added for preventing oxidation and improving the long-term shelf life" (page 3, lines 23-28 and page 4, lines 1-6). First, silver acetate is precipitated from the mixture of silver nitrate and sodium acetate only under certain conditions, i.e. when "a concentrated solution of either silver ion or acetate ion is added to the mixture", see "Solubility of Silver Acetate". Second, if silver acetate is removed from the solution, then what is remained in it? How irradiating the solution with electromagnetic ways or X-rays can cause precipitation of sulfide-containing silver compounds and silver, if there is no silver in the solution to begin with? After second filtration, blowing nitrogen gas through solution and addition of an aldehyde or ammonia to the solution, according to the method disclosed, the only components of the "liquid catalyst" would be aldehyde or ammonia dissolved in solvents, in which original reagents (silver nitrate and sodium acetate) were dissolved. It is not clear, what function such liquid catalyst has in the method of determining concentration of sulfur in an oil sample, and how it can be used in preparing the oil sample for such analysis.

The rest of the specification concerning the preparation of the oil sample for X-ray fluorescence analysis, as well as the analysis itself is written in the same unclear and indefinite language and is not readily comprehensible.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

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The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 1-4, 7-8 and 12-19 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for mixing silver nitrate and sodium acetate in the presence of concentrated solution of silver ion or acetate ion, does not reasonably provide enablement for other conditions. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims, see the reference above. Moreover, sulfide-containing silver compounds can be formed only when there is an excess of silver ions in solution after silver acetate is precipitated, which is not disclosed in the specification. The specification does not disclose, why silver acetate should be formed and removed from the solution, and what is remained in the solution to form the liquid catalyst.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

9. Claims 1-4, 7-8 and 12-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 directed to a liquid catalyst is rejected to as reciting method steps of preparing the catalyst, rather than its composition. It is completely unclear as to what is claimed as a liquid catalyst of claim 1.

Claim 3-4, 7-8 and 12-19 are rejected on the same basis as the specification is objected to. Claim 3 recites preparation of the liquid catalyst by basically removing everything from the solution; the question arises - what then comprises the liquid catalyst? The question is not answered by the specification, as it is indicated above.

Claim 7 reciting a method of preparing an oil sample, is not principally different from the claim 3 reciting a method of preparing the liquid catalyst. If the steps for preparing these solutions are the same, what is the difference between the liquid catalyst and the oil sample?

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Takahasi et al. (US 4,577,338) disclose "X-ray spectrometer and method of calibrating the same" for detecting sulfur in oil samples; Komatani (US 5,570,406) discloses an "X-ray analyzer system and method of increasing response time" in X-ray fluorescent analysis of sulfur in petroleum samples; Ohno et al. (US 5,598,451) disclose "apparatus for measuring the sulfur component contained in oil" using fluorescent X-ray spectrometry; Umadono (JP 54059193A) discloses "fluorescent X-ray sulfur analytical apparatus"; JP 55010858 discloses "apparatus for the continuous X-ray fluorometric determination of trace elements present in petroleum and hydrocarbons"; Inoue (JP 07270288 A) teaches a "method for preparing sample used for fluorescent X-ray analysis", wherein the sample is a petroleum sample; Tsuruya et al. (JP 11211680 A) disclose "X-ray sulfur meter"; JP2001091481 A discloses "background correction method involving computing X-ray intensity ratio by subtracting background from measured fluorescent X-ray intensity and using analytical curve obtained for standard sample"; JP 2002214162 teaches "sulfur content measurement method for petroleum product, involving measuring rate of radiolucency in wavelength before and after X-ray absorption edge of sulfur in sample for measuring sulfur content"; Arriola et al. (Revista, 1997) teaches "determination of contaminating elements in petroleum by x-ray fluorescence"; Krehnin (Chem. Petrol. Engin. and Gazovaya Promyshl, 2001.) teaches "rapid determination of chemical elements in petroleum products by X-ray diffraction".

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yelena G. Gakh, Ph.D. whose telephone number is (571) 272-

1257. The examiner can normally be reached on 9:30 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Yelena G. Gakh
4/22/04

Handwritten signature of Yelena G. Gakh in cursive script.